REMARKS

Claims 12 and 15 are pending in this application. Claim 12 has been amended herein. Upon entry of this amendment, claims 12 and 15 will be pending.

The Applicant respectfully submits that no new matter has been added. It is believed that this Response is fully responsive to the Office Action dated **May 19, 2006**.

Support for the amendment to claim 12 may be found, for example, on page 17, lines 10-21, of the specification.

Claim 12 is rejected under 35 U.S.C. §103(a) as being unpatentable over Takeda et al. (US 6,319,613). (Office action paragraph no. 4)

The rejection of claim 12 over Takeda et al. is overcome by the amendment to claim 12, reciting that "the masterbatch has been molded in a pellet-like shape."

The composition of Takeda et al. is a prepared as a coating solution in which a solvent is present (see abstract; column 2, line 4; etc.) or as a film formed by evaporation of the solvent of the coating solution on a resin film used as a base (abstract; column 2, line 36, etc.). There is no disclosure of a composition having thermoplastic resin and LaB_6 as chief components, where the composition has been molded to a pellet-like shape.

For example, in Example 1 of the reference, fine particles of LaB_6 are dispersed in isobutyl alcohol, and a dispersion of an ultraviolet curing resin and fine particles of ITO are dispersed in isobutyl alcohol and diluted with ethanol to make the coating solution. After solvent evaporation, a film results. There is no suggestion for any composition in a pellet-like form.

Claim 12, as amended, is therefore not obvious over Takeda et al.

Claim 12 is rejected under 35 U.S.C. §103(a) as being unpatentable over Fisher (US 2002/0086926) in view of *Hawley's (Hawley's Condensed Chemical Dictionary, 13th Edition)* and Takeda et al. (US 6,319,613). (Office action paragraph no. 5)

Claim 12 is rejected under 35 U.S.C. §103(a) as being unpatentable over Takeda et al. (US 6,319,613) or Fisher (US 2002/0086926) in view of *Hawley's (Hawley's Condensed Chemical Dictionary, 13th Edition)* and Takeda et al. (US 6,319,613), and further in view of Wypych *(Handbook of Fillers)*. (Office action paragraph no. 6)

Claim 15 is rejected under 35 U.S.C. §103(a) as being unpatentable over Fisher (US 2002/0086926) in view of *Hawley's (Hawley's Condensed Chemical Dictionary, 13th Edition)* and Takeda et al. (US 6,319,613) and further in view of and Hall (EP 0 459 704). (Office action paragraph no. 7)

Reconsideration of the rejections is respectfully requested in view of the amendments to the claims.

In traversing the rejections, Applicant notes that these rejections are based either on Takeda et al. or on Fisher as primary reference. With regard to Takeda et al., Applicant has argued above that there is no suggestion in Takeda et al. for modification of Takeda's composition into "a pellet-like shape." Applicant submits that, since Takeda et al. only discloses a coating solution or a film, there is no suggestion in the other references for such a modification of Takeda et al.

The rejections based on Fisher are based on the Examiner's assertion that:

> "While Fisher only discloses [] amounts of hexaboride up to 0.1 wt%, it is considered that it would have been obvious to one of ordinary skill in the art to utilize a masterbatch which would necessarily contain a higher concentration of the hexaboride, including amounts like presently claimed, in order to improve the dispersion of the hexaboride in the final composition." (page 3, 3rd paragraph, of the Office action)

Applicant respectfully disagrees and argues, from a technological standpoint, that it is **impossible** to modify Fisher's polyvinyl butyral composition to be a master batch.

(1) First of all, Applicant notes paragraph [0005], in which Fisher teaches that "Polyvinyl butyral (PVB) resin sheet is used in light-transmitting laminates containing one or more rigid layers, such as glass, for applications such as automotive and structural glazings, show cases, and protective glass for pictures, documents and the like." Thus, Fisher's polyvinyl butyral composition is mainly used as an interlayer film which is applied by being sandwiched between a plurality of sheets of glass.

In light of the main use as an interlayer film, Fisher's polyvinyl butyral composition comprises a mixture of a polyvinyl butyral resin and a plasticizer. This may be seen in the description in paragraph [0026] where Fisher teaches that "The PVB resin of the sheet is typically plasticized with about 20 to 80 and more commonly 25 to 60 parts plasticizer per hundred parts of resin."

The purpose in Fisher of mixing the polyvinyl butyral resin with the plasticizer lies in imparting to the resin flexibility as well as glass adhesion. In addition, in view of the glass adhesion of the resin, the mixing ratio of the plasticizer is so controlled as to ensure that the polyvinyl butyral composition (interlayer film) has a glass transition temperature (Tg) of about 3 to about 30°C. For example, such a glass transition temperature (Tg) is adjusted at about 3°C for automotive glass sheets and at about 30°C for structural glass sheets.

As indicated above, the glass transition temperature (Tg) of the polyvinyl butyral composition is set to range from about 3 to about 30°C, and thus Fisher's polyvinyl butyral composition is **not in a solid state** at room temperature. In the end, it is physically impossible to prepare Fisher's polyvinyl butyral composition as a master batch, and impossible to prepare it in pellet-like shape.

(2) Next, paragraph [0020] is noted, in which Fisher teaches that "Each of the lanthanum hexaboride, indium tin oxide and antimony tin oxide is preferably introduced into the PVB resin by first forming a dispersion in a PVB compatible solvent, most preferably a plasticizer." Fisher employs a method in which a hexaboride, that is, a heat radiation shielding component, is first dispersed in a plasticizer, followed by mixing of the resultant dispersion with a polyvinyl butyral

resin, to thereby obtain a polyvinyl butyral composition in which the hexaboride has been incorporated.

More specifically, the hexaboride is dispersed in the plasticizer, followed by dispersion of the hexaboride-containing plasticizer in the polyvinyl butyral resin, whereby the plasticizer gives to the resulting polyvinyl butyral composition the flexibility and glass adhesion properties mentioned above. In this respect, please refer to Example 1 described in paragraph [0030], etc.

(3) To summarize, what is disclosed by Fisher is only a method in which a hexaboride, i.e., a heat radiation shielding component, is dispersed in a plasticizer, followed by addition to a polyvinyl butyral resin of the plasticizer dispersion in which the heat radiation component has been dispersed, to thereby obtain a polyvinyl butyral composition, and this composition is molded into a sheet-like shape with eventual formation of the above-indicated interlayer film.

In this method of forming an interlayer film, there is no suggestion to previously prepare a polyvinyl butyral composition (master batch) in which a hexaboride has been dispersed at a high concentration, and to subsequently dilute the composition when an interlayer film is formed. Furthermore, Fisher's polyvinyl butyral composition is not of a solid nature at room temperature, and hence, it is physically difficult to prepare this composition as a master batch or in pellet-like shape.

Technologically, therefore, it is impossible to modify Fisher's polyvinyl butyral composition to be a master batch or to have a pellet-like shape. Therefore, there is no suggestion or motivation in the cited references for a modification that would produce the invention of claim 12 or 15.

In addition, Applicant notes that, taking advantage of its solid state at room temperature, the heat radiation shielding component-containing master batch of the present invention is capable of prolonged storage as well as free concentration control of the heat radiation shielding component, prior to use of the master batch, by being diluted and mixed with a thermoplastic resin form material of the same type as the thermoplastic resin of the master batch, or a different type of thermoplastic resin form material having a compatibility with the master batch. Upon molding and hardening through molding means, the master batch provides a heat radiation shielding transparent resin form. Consequently, the claimed master batch is highly convenient.

Claims 12 and 15 are therefore not obvious over Fisher, *Hawley's*, Takeda et al., Wypych and Hall, taken separately or in combination.

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact the Applicant's undersigned agent at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed, the applicant respectfully petitions for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

ARMSTRONG, KRATZ, QUINTOS,
HANSON & BROOKS, LLP

Daniel A. Geselowitz, Ph.D.
Agent for Applicant
Reg. No. 42,573

DAG/bh
Atty. Docket No. **030812**
Suite 1000
1725 K Street, N.W.
Washington, D.C. 20006
(202) 659-2930

23850
PATENT TRADEMARK OFFICE

Q:\FLOATERS\BRENDA\030 Cases\030812_Amendment in re OA of 05-19-06